

AD-A253 244



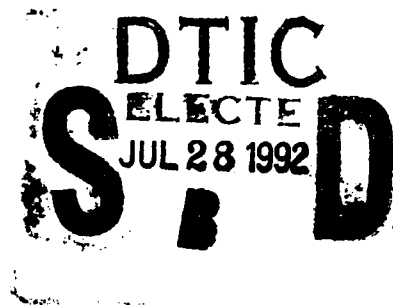
Naval War College  
Newport, Rhode Island

(2)

THE HUNDRED HOUR END POINT:  
AN OPERATIONAL ASSESSMENT

by

John S. Brown  
LTC, ARMOR, USA



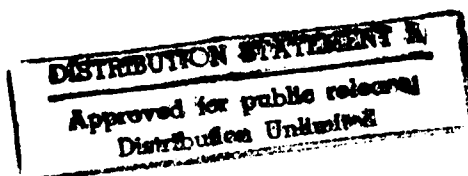
A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

Signature: John Sloan Brown

19 June 1992

Paper Directed by Captain H. Ward Clark  
Chairman, Department of Military Operations  
and  
Colonel Duane D. Barber, USA  
Senior Army Advisor



Approved by:

Duane D Barber 18 May 1992  
Faculty Research Advisor Date

92-20202



92 7 28 119

## REPORT DOCUMENTATION PAGE

|  |   |   |                         |
|--|---|---|-------------------------|
| 1a. REPORT SECURITY CLASSIFICATION<br>UNCLASSIFIED   |   | 1b. RESTRICTIVE MARKINGS  |                         |
| 2a. SECURITY CLASSIFICATION AUTHORITY  |   | 3. DISTRIBUTION/AVAILABILITY OF REPORT<br>DISTRIBUTION STATEMENT A: Approved for Public Release; distribution is unlimited. |                         |
| 2b. DECLASSIFICATION/DOWNGRADING SCHEDULE  |   |   |                         |
| 4. PERFORMING ORGANIZATION REPORT NUMBER(S)  |   | 5. MONITORING ORGANIZATION REPORT NUMBER(S)   |                         |
| 6a. NAME OF PERFORMING ORGANIZATION<br>OPERATIONS DEPARTMENT   | 6b. OFFICE SYMBOL<br>(If applicable)<br>C | 7a. NAME OF MONITORING ORGANIZATION   |                         |
| 6c. ADDRESS (City, State, and ZIP Code)<br>NAVAL WAR COLLEGE<br>NEWPORT, R.I. 02841  |   | 7b. ADDRESS (City, State, and ZIP Code)   |                         |
| 8a. NAME OF FUNDING/SPONSORING ORGANIZATION  | 8b. OFFICE SYMBOL<br>(If applicable)      | 9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER   |                         |
| 8c. ADDRESS (City, State, and ZIP Code)  |   | 10. SOURCE OF FUNDING NUMBERS   |                         |
|  |   | PROGRAM ELEMENT NO.   | PROJECT NO.             |
|  |   | TASK NO.  | WORK UNIT ACCESSION NO. |
| 11. TITLE (Include Security Classification)<br>THE HUNDRED HOUR END POINT: AN OPERATIONAL ASSESSMENT (U)   |   |   |                         |
| 12. PERSONAL AUTHOR(S) LTC JOHN SLOAN BROWN, USA   |   |   |                         |
| 13a. TYPE OF REPORT<br>FINAL   | 13b. TIME COVERED<br>FROM TO              | 14. DATE OF REPORT (Year, Month, Day)<br>1992 JUNE 19   | 15. PAGE COUNT<br>44    |
| 16. SUPPLEMENTARY NOTATION A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Operations. The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.  |   |   |                         |
| 17. COSATI CODES   |   | 18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)   |                         |
| FIELD  | GROUP                                     | WAR TERMINATION, 1991 GULF WAR, OPERATIONAL ASSESSMENT  |                         |
|  |   |   |                         |
|  |   |   |                         |
| 19. ABSTRACT (Continue on reverse if necessary and identify by block number)<br>The decision to end the Persian Gulf War at 280800C February 1991 is assessed in operational terms. The paper argues that an operational pause at that time was appropriate given concerns with respect to fuel, maintenance, displaced logistical architecture, unsecured rear areas and fatigue. The paper further argues that advantages gained from a limited continuation of the attack into Basra, Iraq would not have been worth the costs, and that Iraqi units that escaped through Basra after the ceasefire do not explain the survival of Saddam Hussein's regime. Briefly addressing potential counterarguments, the paper then discusses the doctrinal implications of a ground war best ended in its hundredth hour, an encirclement too costly to close, and a dictator too stable to be overthrown by external military disaster alone. |   |   |                         |
| 20. DISTRIBUTION/AVAILABILITY OF ABSTRACT<br><input checked="" type="checkbox"/> UNCLASSIFIED/UNLIMITED <input type="checkbox"/> SAME AS RPT <input type="checkbox"/> DTIC USERS   |   | 21. ABSTRACT SECURITY CLASSIFICATION<br>Unclassified  |                         |
| 22a. NAME OF RESPONSIBLE INDIVIDUAL<br>CHAIRMAN, OPERATIONS DEPARTMENT   |   | 22b. TELEPHONE (Include Area Code)<br>841-3414  | 22c. OFFICE SYMBOL<br>C |

Abstract of  
THE HUNDRED HOUR END POINT:  
AN OPERATIONAL ASSESSMENT

The decision to end the Persian Gulf War at 280800C February 1991 is assessed in operational terms. The paper argues that an operational pause at that time was appropriate given concerns with respect to fuel, maintenance, displaced logistical architecture, unsecured rear areas and fatigue. The paper further argues that advantages gained from a limited continuation of the attack into Basra, Iraq, would not have been worth the costs, and that Iraqi units that escaped through Basra after the ceasefire do not explain the survival of Saddam Hussein's regime. Briefly addressing potential counterarguments, the paper then discusses the doctrinal implications of a ground war best ended in its hundredth hour, an encirclement too costly to close, and a dictator too stable to be overthrown by external military disaster alone.

# TABLE OF CONTENTS

|   | PAGE |
|---|------|
| ABSTRACT . . . . .                                  | 11   |
| LIST OF ILLUSTRATIONS . . . . .                     | 1v   |
| I. INTRODUCTION . . . . .                           | 1    |
| II. THE CULMINATING POINT . . . . .                 | 2    |
| III. THE BASRA OPTION . . . . .                     | 10   |
| IV. WHY SADDAM HUSSEIN SURVIVED . . . . .           | 14   |
| V. DOCTRINAL IMPLICATIONS AND CONCLUSIONS . . . . . | 21   |
| NOTES . . . . .                                     | 26   |
| BIBLIOGRAPHY . . . . .                              | 31   |

DTIC QUALITY INSPECTED 2

|                    |                                     |
|--------------------|-------------------------------------|
| Accession For      |                                     |
| NTIS GRA&I         | <input checked="" type="checkbox"/> |
| DTIC TAB           | <input type="checkbox"/>            |
| Unannounced        | <input type="checkbox"/>            |
| Justification      |                                     |
| By                 |                                     |
| Distribution/      |                                     |
| Availability Codes |                                     |
| Dist               | Avail and/or Special                |
| A-1                |                                     |

## LIST OF ILLUSTRATIONS

| FIGURE   | PAGE |
|--|------|
| 1. IRAQI DISPOSITION IN THE KTO, 240400C . . . . .   | v    |
| 2. DISPOSITION OF FORCES IN THE KTO, 280800C . . . . | vi   |
| 3. THE BASRA SECTOR AND PROBABLE DEFENSES . . . . .  | vii  |
| 4. OVERALL DISPOSITION OF IRAQI FORCES, 240400C . .  | viii |
| 5. REPRESENTATIVE AMERICAN VEHICLES . . . . .        | ix   |
| 6. REPRESENTATIVE IRAQI VEHICLES . . . . .           | x    |

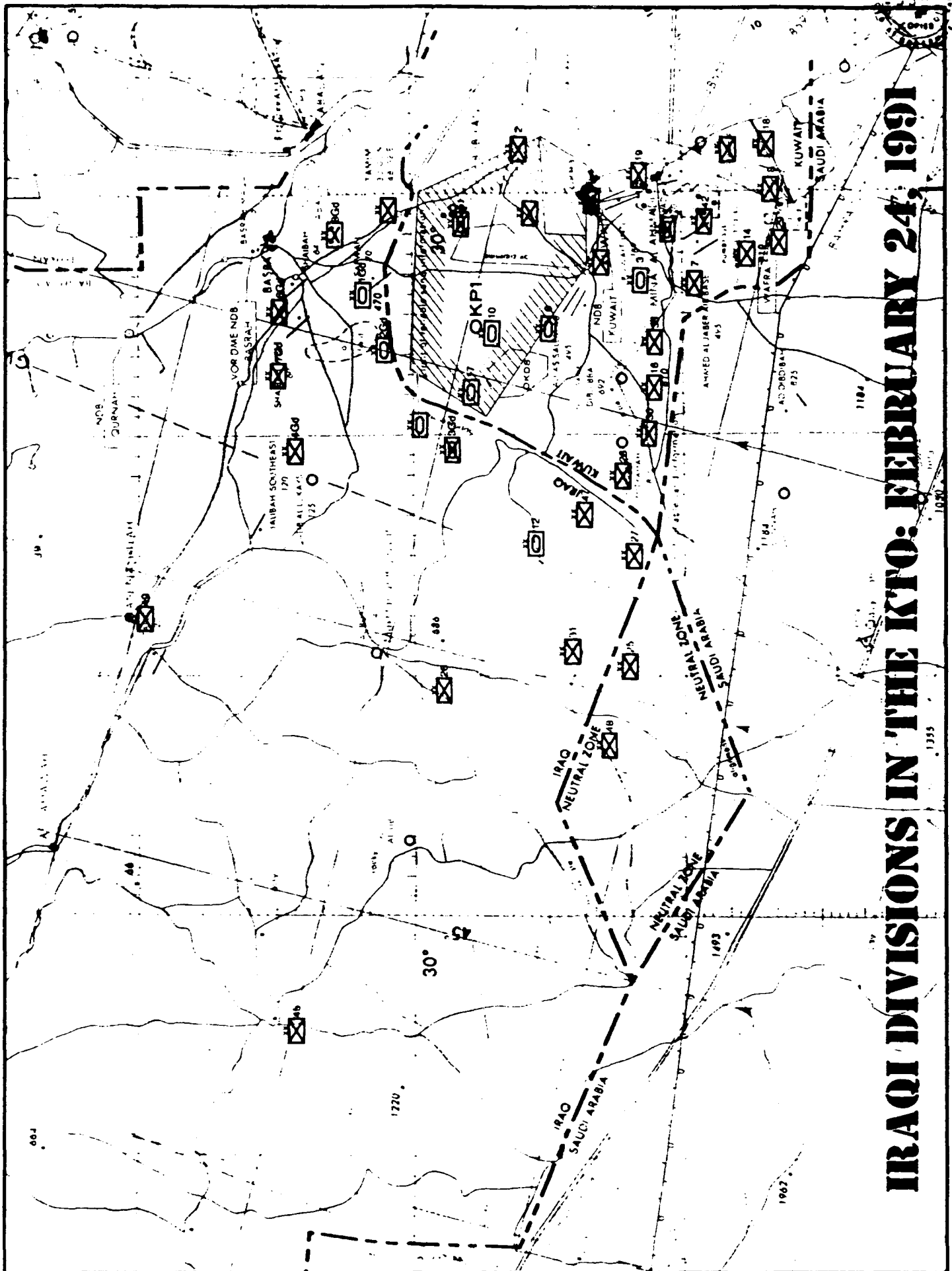
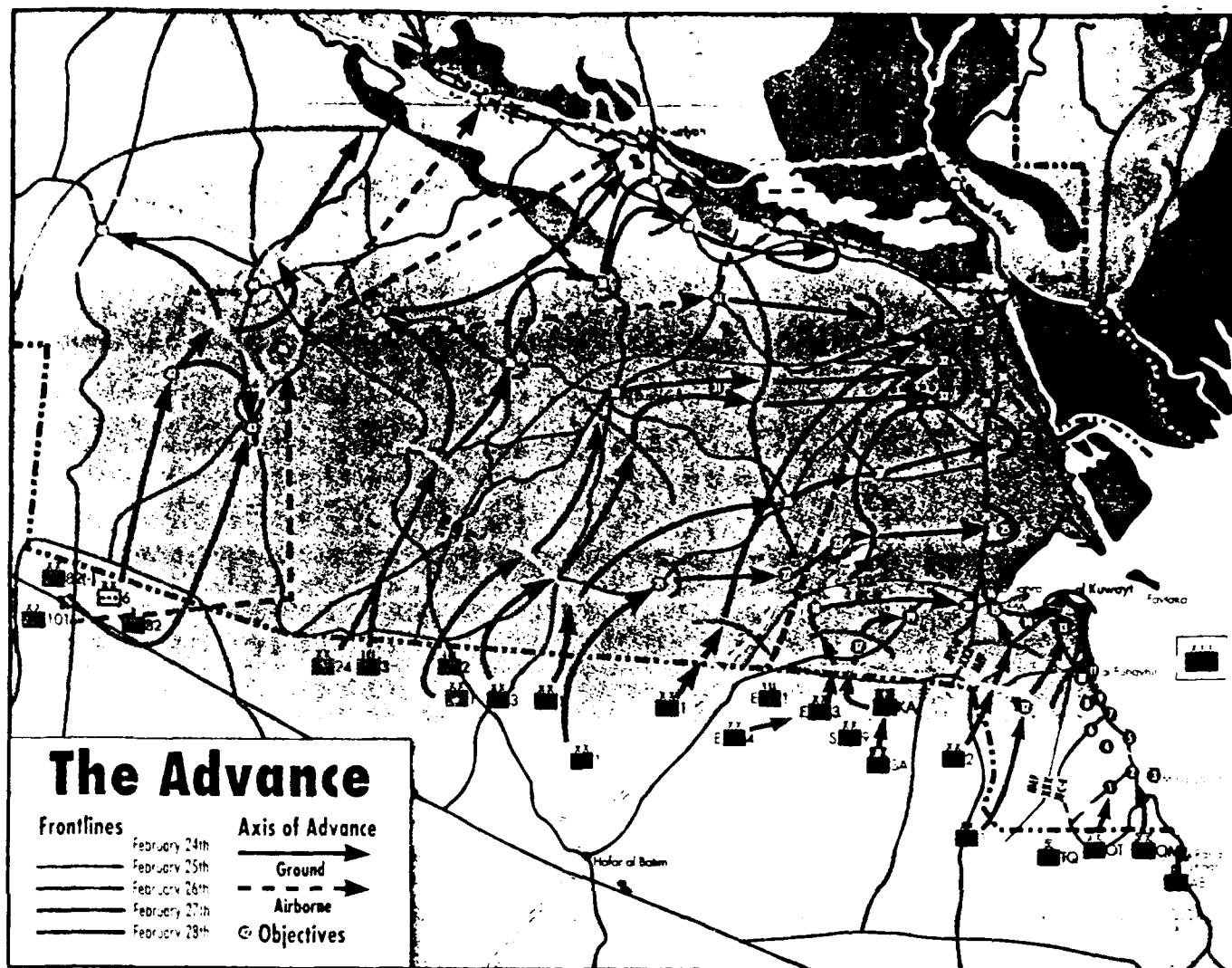


FIGURE 1, From Frank Chadwick, Gulf War Fact Book



| Unit     | Map | Actual       |              |    |                            |
|----------|-----|--------------|--------------|----|----------------------------|
| IFC-E    | 1   | Obj 1        | US 1 INF     | 25 | Obj SODIUM                 |
|          | 2   | Obj 2        |              | 26 | Obj NORFOLK                |
|          | 3   | Obj 3        |              | 27 | Obj MINDEN                 |
|          | 4   | Obj 4        |              | 28 | Obj HAWK                   |
|          | 5   | Obj 5        |              | 29 | Obj DENVER                 |
|          | 6   | Obj 6        | US 1 ARM     | 30 | Obj PURPLE                 |
|          | 7   | Obj 7        |              | 31 | Obj COLLINS (w. 3AD)       |
|          | 8   | Obj 8        | US 3 ARM     | 32 | Obj BONN                   |
|          | 9   | Obj 9        |              | 33 | Obj COLLINS (w. 1AD)       |
|          | 10  | Obj 10       | US 1 CAV     | 34 | Obj DORSET                 |
|          | 11  | Obj 11       | US 24 INF    | 35 | Obj RALEIGH (planned)      |
| 1 MFF    | 12  | Obj A        |              | 36 | Obj ANVIL (planned)        |
|          | 13  | Obj C        |              | 37 | Obj GRAY 2-24              |
|          | 14  | Obj D        |              | 38 | Obj BROWN 1st 24           |
|          | 15  | Obj B        |              | 39 | Obj RED 1-24               |
|          | 16  | Obj E        |              | 40 | Obj GOLD 1-24              |
| IFC-N    | 17  | Obj B        | FR 6 LT      | 41 | Obj ORANGE 1 & 2 24        |
|          | 18  | Obj A        |              | 42 | Obj ROCHANBEAU             |
|          | 19  | Obj C        |              | 43 | Obj BORDEAUX               |
|          | 20  | Obj D        |              | 44 | Obj WHITE                  |
|          | 21  | Obj ALLEN    |              | 45 | Obj PARIS                  |
| UK 1 ARM | 22  | Obj WATERLOO | US 1st ASSLT | 46 | Obj TIM FORT LEE (w. SACR) |
|          | 23  | Obj VARSITY  |              | 47 | Obj COBRA                  |
|          | 24  | Obj COBALT   |              | 48 | Obj EAGLE 1-24 w. AHS      |
|          |     |              |              |    | Obj THOMAS 1-24 w. AHS     |

FIGURE 2, From Bo Eldridge, "Desert Storm", Command, Dec. 1991

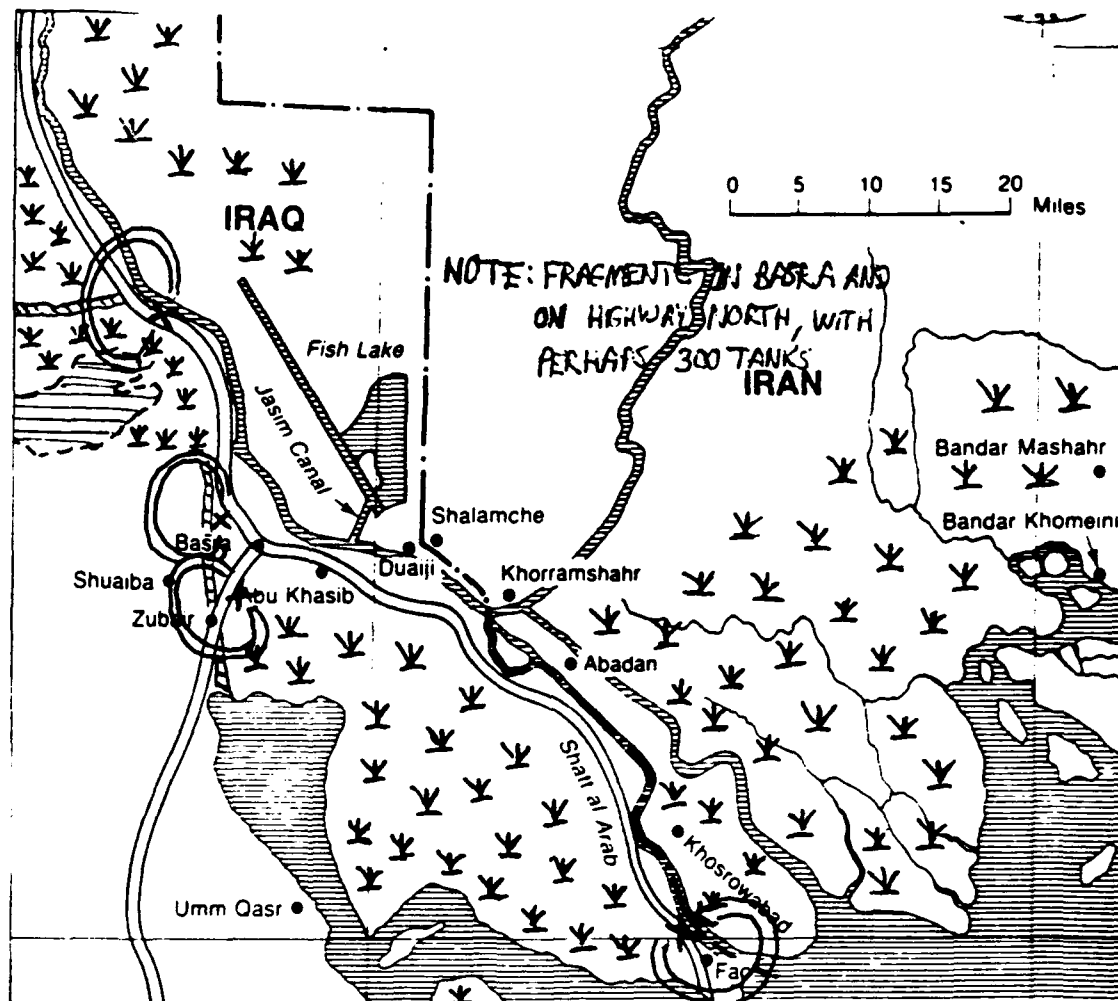


FIGURE 3  
THE BASRA SECTOR AND PROBABLE DEFENSES  
SEE NOTES 24, 25, AND 29



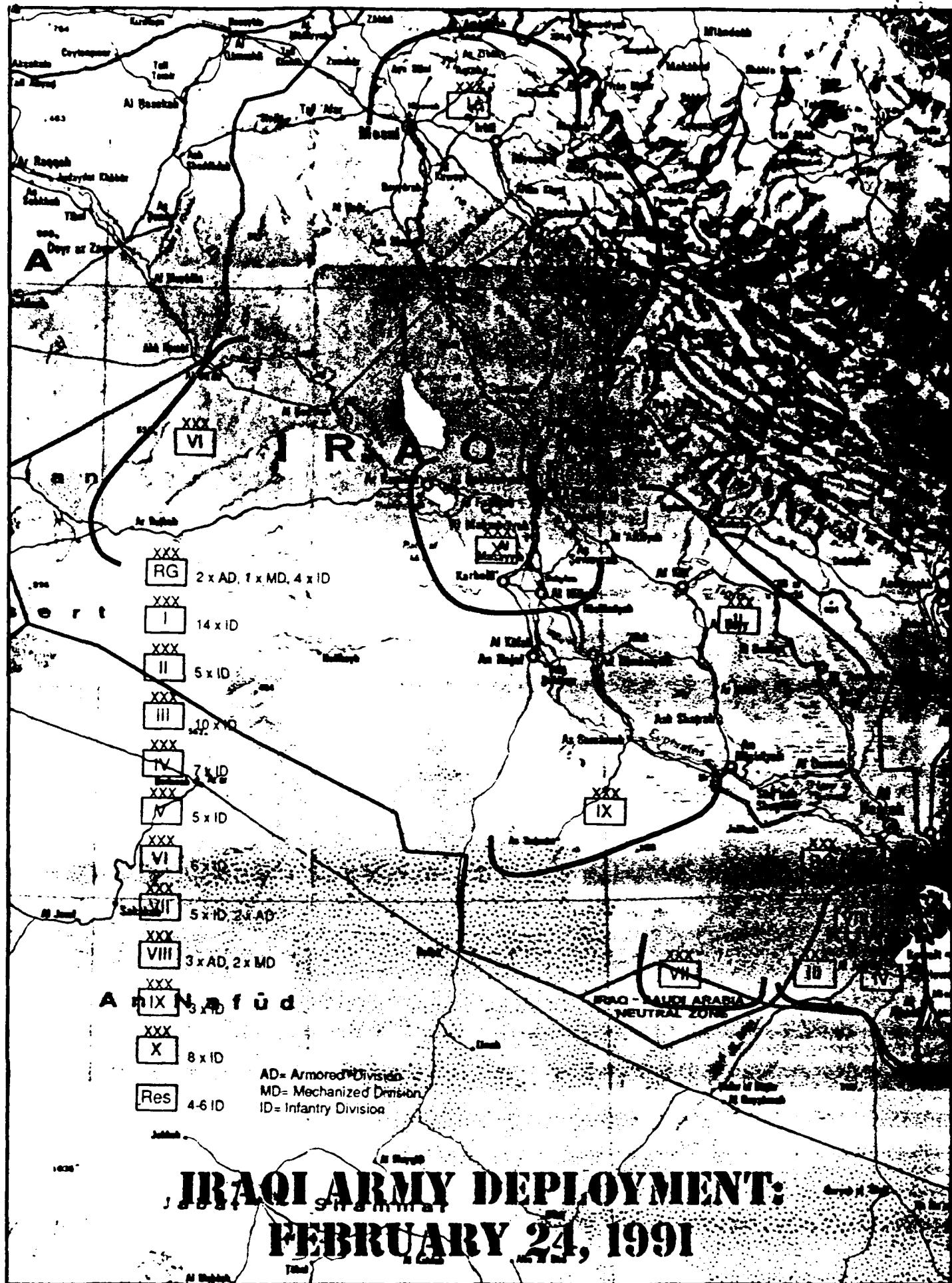
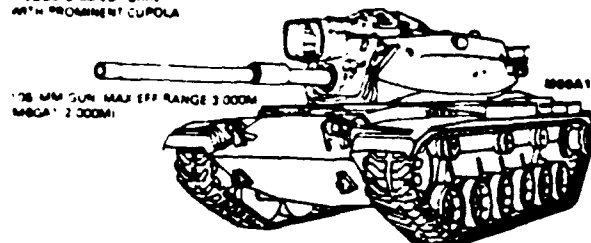


FIGURE 4, From Frank Chadwick, Gulf War Fact Book



**M60A3 MBT** USED BY US, ISRAEL, EGYPT, AUSTRIA AND THIRD WORLD COUNTRIES  
M60A1 ONLY HAS A LARGE RECTANGULAR SEARCHLIGHT OVER THE MAIN GUN

WEDGE SHAPED TURRET  
WITH PROMINENT CUPOLA



105 MM GUN MAX EFF RANGE 3,000M  
M60A1 2,000M

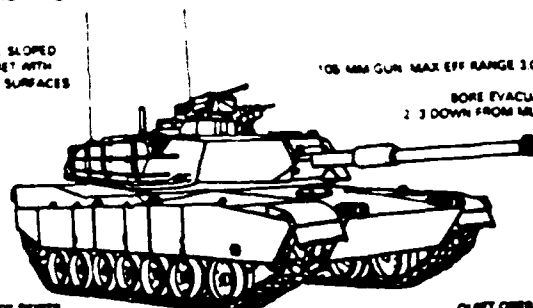
M60A1 SIMILAR TO M60A3 BUT LACKS THERMAL SHROUD AND SOMETIMES THE SMOKE GRENADE LAUNCHERS

000 0000

**M1 ABRAMS MBT**

USED BY US ONLY

WELL SLOPED  
TURRET WITH  
FLAT SURFACES



105 MM GUN MAX EFF RANGE 3,000M

BORE EVACUATOR  
2-3 DOWN FROM MUZZLE

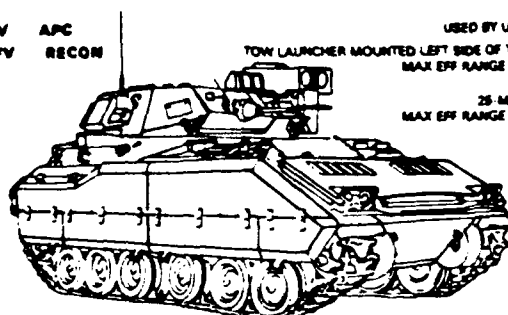
TRACE SIGHTS  
VERY HIGH AUTOMOTIVE PERFORMANCE

QUIET OPERATION  
DUE TO TURBINE ENGINE

000 0000

**M2 IFV APC**  
**M3 CFV RECON**

USED BY US ONLY  
TOW LAUNCHER MOUNTED LEFT SIDE OF TURRET  
MAX EFF RANGE 3,750M



25 MM GUN  
MAX EFF RANGE 1,400M

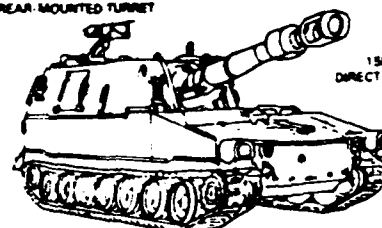
2AP BETWEEN 30 AND 4TH ROADWHEELS

000 1000 1

**M109 SP GUN** USED BY US, NATO COUNTRIES, ISRAEL, THIRD WORLD COUNTRIES

SHORT OR LONG GUN TUBE WITH LARGE  
DOUBLE BAFFLE MUZZLE BRAKE

LARGE BOXY REAR-MOUNTED TURRET



155 MM GUN MAX EFF  
DIRECT FIRE RANGE 2,800M

EASILY CONFUSED WITH 253

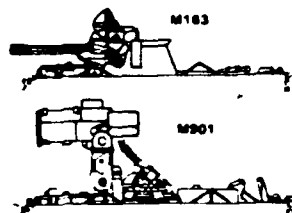
000 0000

**M113 AND VARIANTS APC**

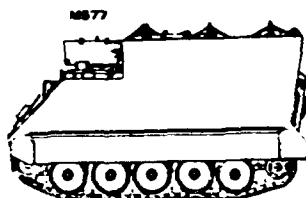
USED BY 80 COUNTRIES INCLUDING  
US NATO AND THIRD WORLD COUNTRIES

COMMON VARIANTS INCLUDE STANDARD INFANTRY CARRIER, MORTAR CARRIERS  
M577 COMMAND M501 TOW LAUNCHER VULCAN AIR DEFENSE WEAPON

MANY OTHER LOCAL VARIANTS EXIST WORLDWIDE



M113



M577

EASILY CONFUSED WITH TYPE 531

000 1000 1

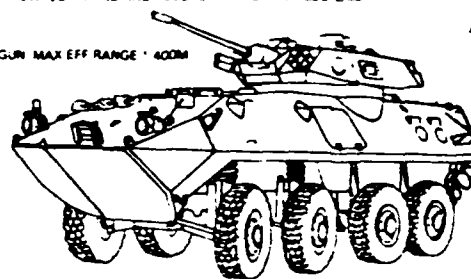
**LAV 25 RECON**

USED BY US MARINES ONLY

MORTAR TOW COMMAND AND RECOVERY VARIANTS ALSO EXIST

AMPHIBIOUS

25 MM GUN MAX EFF RANGE 1,400M



EASILY CONFUSED WITH BTR 60 BTR 70 AND OT 64

000 1000 1

FIGURE 5  
REPRESENTATIVE AMERICAN VEHICLES  
FROM GTA 17-2-13



**BMP APC** USED BY WARSAW PACT AND THIRD WORLD COUNTRIES  
 SAGGERATION MAX EFF RANGE 2,000M CENTRALLY MOUNTED TURRET  
 BOAT SHAPED HULL

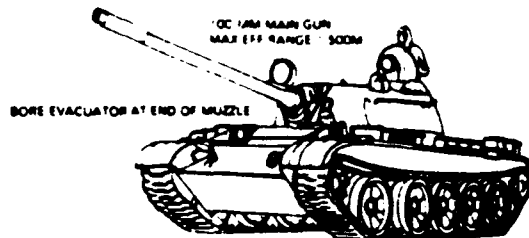
73 MM ROCKET GUN  
 MAX EFF RANGE 1,000M



AMPHIBIOUS TWO BULGING DOORS IN REAR  
 EASILY CONFUSED WITH AMX 10P MARDER AND AMX

100 0000

**T-84 88 MBT** USED BY USSR WARSAW PACT AND THIRD WORLD COUNTRIES

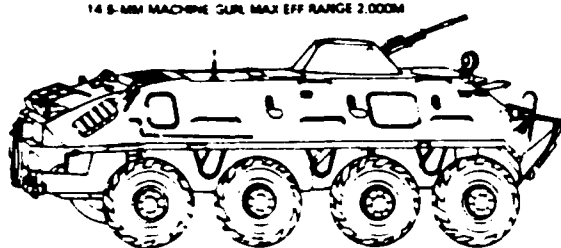


BORE EVACUATOR AT END OF MUZZLE

SPACE BETWEEN 1ST AND 20 ROAD WHEELS  
 EASILY CONFUSED WITH AMX 30 AND M48AS  
 100 MM MAIN GUN  
 MAX EFF RANGE 3,000M  
 T-80 AND T-80 ARE COPIES USED BY CHINA AND IN KOREA  
 T-80 HAS NEW MAIN GUN WITH BORE EVACUATOR 1/3 BACK FROM MUZZLE

100 0000

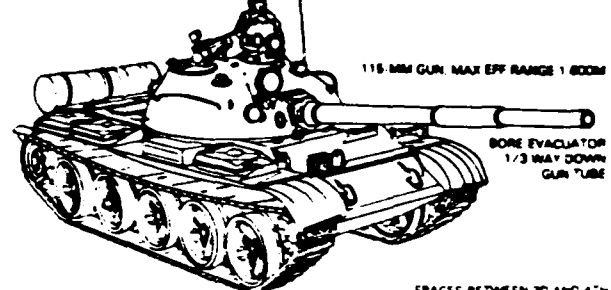
**BTR-80 APC** USED BY USSR WARSAW PACT AND THIRD WORLD COUNTRIES  
 14.5-MM MACHINE GUN MAX EFF RANGE 2,000M



EASILY CONFUSED WITH LUCHS AND LAV 25 AMPHIBIOUS

100 0000

**T-62 MBT** USED BY USSR WARSAW PACT AND SOME THIRD WORLD COUNTRIES



115-MM GUN MAX EFF RANGE 1,800M

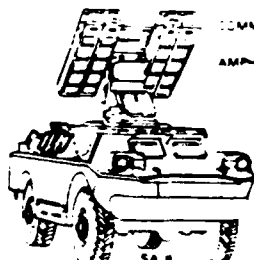
BORE EVACUATOR 1/3 WAY DOWN GUN TUBE

EASILY CONFUSED WITH AMX 30 AND M48AS  
 SPACES BETWEEN 30 AND 4TH AND 4TH AND 5TH ROAD WHEELS

100 0000

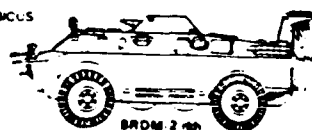
**BRDM-2 RECON** USED BY USSR WARSAW PACT AND THIRD WORLD COUNTRIES

BASIC RECON VERSION HAS 14.5-MM MACHINE GUN VARIANTS WITH AT'S SPANDRELL ATOM PHOTOTASKEN CAM



COMMAND VARIANTS WITHOUT TURRET OR ARMAMENT

AMPHIBIOUS

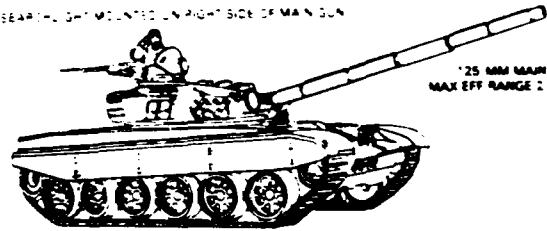


BRDM-2 RECON  
 BRDM 2TH NBC RECON VEHICLE HAS MARKING FLAG SET AT REAR

EASILY CONFUSED WITH LAV 25 AM 300 AND FOX

100 0000

**T-72 MBT** USED BY USSR WARSAW PACT SYRIA AND ROM  
 SOME HAVE SMOKE GRENADE LAUNCHERS ON TURRET  
 REAR LIGHT MOUNTED ON RIGHT SIDE OF MAIN GUN



125-MM MAIN GUN  
 MAX EFF RANGE 2,000M

T-72 M-90C AND M-90C-3 DO NOT HAVE OPTICAL RANGEFINDER OUTLET IN FRONT OF TURRET HATCH

EASILY CONFUSED WITH AMX 30

100 0000

FIGURE 6  
 REPRESENTATIVE IRAQI VEHICLES  
 FROM GTA 17-2-13

# THE HUNDRED HOUR END POINT: AN OPERATIONAL ASSESSMENT

## CHAPTER I

### INTRODUCTION

At 280800C February 1991, the allied coalition ceased fire. Its armored vehicles clattered to a halt along a four hundred kilometer arc stretching from Mina Sa'ud on the Persian Gulf through As Samawah on the Euphrates. To the weary men aboard those tracks countless acres of smoldering Iraqi vehicles seemed signs enough of victory, but an emerging consensus now characterizes that victory as incomplete.<sup>1</sup> Desert Storm veterans might dismiss this as unappreciative carping by men not in danger at the time, but the critics quote -- or misquote -- prestigious Desert Storm veterans themselves. How correct was the decision to end the ground war in its hundredth hour?

Setting diplomatic, political, and media impact issues aside as beyond its scope, this paper argues that a hundred hour end point was essentially correct for operational reasons alone. It builds its case in three stages: allied forces had reached a culminating point justifying an operational pause, advantages gained continuing an attack into Basra would not have justified further losses incurred, and the Iraqi fragments that would have been destroyed by continuing into Basra were inconsequential -- and certainly did not save Iraq for Saddam Hussein. Let us develop these topics in turn, and then address doctrinal implications of a ground war best ended in its hundredth hour.

## CHAPTER II

### THE CULMINATING POINT

At the time of the ceasefire, coalition ground forces were approaching a culminating point. They were not in danger of losing battles or engagements, but were in danger of accelerating casualties with decelerating results. It is no criticism to assert that four days of intense combat operations had momentarily exhausted physical and psychological resources. Among numerous considerations suggesting the wisdom of an operational pause, the most salient were fuel, maintenance, displaced logistical architecture, unsecured rear areas, and fatigue.

Ample fuel reserves existed in theater, but not in the fuel cells of the leading tanks. Of six M1A1 equipped divisions, five were critical on fuel forward of the Division Support Command (DISCOM). The foremost task forces had perhaps fifty gallons each in their five hundred and five gallon capacity M1A1's, and little beyond that in their combat trains.<sup>2</sup> It is no secret that the M1A1 is fuel consumptive, no secret that M1A1 logistical planners prefer orderly seventy kilometer stages to facilitate fuel truck turnarounds,<sup>3</sup> and no secret that the Iraqi collapse precipitated a breakneck pursuit that threw logistical orderliness to the winds. The pace of pursuit was appropriate for the objective of speedily liberating Kuwait, but it did not produce an optimal posture for immediate follow-on operations.

Unfortunately for tacticians, they cannot ignore logisticians indefinitely. The bill came due on the morning of 28 February. Time was necessary to cycle empty fuel trucks through each link in the three hundred kilometer chain connecting the leading M1A1 tanks and Log Base ECHO, a few miles south of the neutral zone.

Maintenance posed less obvious and less immediate problems than fuel. The combat vehicles -- M1A1 tanks, M2/M3 Bradley infantry fighting vehicles and even the older M109A2 howitzers -- were in excellent shape, with readiness rates in the high ninetieth percentiles. Most other vehicles were about as well off.<sup>4</sup> This had not happened without significant effort, however. In a typical tank battalion seventeen vehicles went down for maintenance during the arduous desert crossing. Most of these were quickly repaired and returned to combat by mechanics riding just behind them in the combat trains. This is not to mention uncountable maintenance concerns even more quickly resolved by vehicle crewmen. Maintenance consumes Class IX -- repair parts -- and cupboards were bare forward of division main support battalions with respect to many critical components.<sup>5</sup> Insofar as most vehicle makes were concerned, Class IX, like fuel, posed a simple distribution problem. A momentary pause would accelerate selected items through the capillaries in the supply system.

Maintenance problems with respect to two combat service support vehicles, the M88A1 medium recovery vehicle and the M577 command track, were more severe. The venerable M88A1 had been

designed to recover the fifty-two ton M60 tank and was altogether unsuitable for the sixty-seven ton M1A1. In soft sand or tortured terrain it had trouble with even lighter vehicles. On 28 February M88A1 readiness rates were typically less than fifty percent.<sup>6</sup> The theater supply of M88A1 engines and transmissions had been exhausted, rebuilt engines and transmissions failed quickly, a crisis infusion of Class IX from CONUS proved necessary, and M88A1 readiness rates were not acceptable again until the third week of March.<sup>7</sup> It is difficult to sustain mechanized operations without a recovery vehicle: no overhead lift to exchange major components, no winch to pull vehicles out of treacherous sticks or to facilitate track replacement, no armored vehicle to carry mechanics and their gear forward into the battle area, and no dedicated tow to whisk disabled vehicles to the next halt or maintenance collection point. To tow a vehicle with a like-type vehicle is to take two out when one has gone down; in the case of the M1A1 it is also to risk melting electronic components with the towing tank's fiery exhaust.

The M577 is another antique that suffered in the vast reaches of the desert. In theory it is a nerve center through which a major fraction of the modern battlefield's intricate synchronization flows. In practice maintenance-wise commanders built enough redundancy into their communications to work around M577's that went down. The principal backfill for the M577 was the thin-skinned but ubiquitous High Mobility Multipurpose Wheeled Vehicle (HMMWV). In some cases substitution was

impossible. The artillery forward support officer's M577, for example, features complex equipment so irreplaceable the track itself must continue to march -- even if towed and with its electronics powered by the generator of another vehicle.<sup>8</sup>

The maintenance geography that emerges on the modern battlefield is a fraction of the vast logistical architecture connecting forward combatants through successive echelons of support to major logistical facilities and the national industrial base. On 28 February theater logisticians were hurriedly -- but according to plan -- pushing forward depots, transportation routes, and a flow of services and supplies north and east into Kuwait.<sup>9</sup> The gigantic convoys of antiquated trucks necessary to sustain the offensive could not follow directly in the tracks of the M1A1's; suitable routes forward had to be cleared or engineered. At the battalion task force level only the redoubtable M977 and M978 Heavy Expanded Mobility Tactical Trucks (HEMTT's) kept close to the tanks. Older trucks were in field trains trailing the M1A1's by as much as a hundred kilometers.<sup>10</sup> Higher echelons of support were, of course, even further back. It took sixteen days to shift the supplies, equipment, and infrastructure that so efficiently supported General Schwartzkopf's "Hail Mary" play.<sup>11</sup> A comparable period would have been necessary to as efficiently support a continuing offensive in the Euphrates Valley. This is not to mention the wisdom of redeploying armored vehicles by truck in order to save track wear if significant distances were involved, which would



have been the case if forces in or near Kuwait were redirected toward Baghdad.

As logisticians pushed assets forward into the desert, thousands of Iraqis stranded in the wake of the American offensive became a concern. Hidden in bunkers, trenches, and firing pits, they had survived the awesome gunnery that annihilated their vehicles and swept away their unit organizations. Some still had fight in them; most did not. All were desperate for water. Tiny improvised American guard forces held hundreds of prisoners of war in check with little more than mystique and a few cases of bottled water. In some cases Iraqi diehards fought for water in the course of exfiltration; spirited miniature battles raged around isolated maintenance clusters or wheeled convoys separated from the most heavily trafficked routes.<sup>12</sup> At the time of the ceasefire one representative brigade sent a task force of two reinforced companies back through its route to recover maintenance clusters, facilitate prisoner of war collection, and sanitize rear areas. The breadth of the attack precluded the comprehensive effectiveness of follow-and-support forces. Some days proved necessary to snuff out resistance, consolidate prisoners, and secure rear areas for logistical purposes.<sup>13</sup>

This scuffling in rear areas implied even more fatigue for already weary men. Few combatants slept much during the ground war, many gunners had been on their sights for thirty-six continuous hours, and vehicle movement had been virtually without

pause. No one was wearier than the fuel truckers, who necessarily drove twice as far as other drivers to make refills on time. Any commander who inspected his perimeter on the night of 28 February knows how great a physical toll the war had taken, and how extraordinary an effort proved necessary just to keep security awake.<sup>14</sup> It is true that a good night's sleep and a few MRE's soon restored the troops' braggadocio, and most were not long in trumpeting how much further they could have gone and how much more they could have done. They remember the men they were on 24 February better than they remember the men they were on the 28th. On 28 February they were near-somnolent zombies.

Physical exhaustion is easy to understand; psychological exhaustion is less tangible. The harsh realities of combat had momentarily drained the enthusiasm of the young men who fought it. They had been afraid for hours at a time. Many owed their lives to the speed and accuracy that distinguished an American from an Iraqi gunner. They had seen exploding vehicles, charred bodies, Iraqis crushed by passing tanks, flames so close they scorched externally mounted gear, and endless miles of war ravaged landscape. Some portion of the Iraqis they machine-gunned must have wanted to surrender; how could one tell in the distance or in the dark? Women and children were caught in the carnage along the "Highway of Death," the soldiers saw this with their own eyes. On the last night of the war one gunner wept inconsolably when he mistook a camel that would not identify itself for an infiltrator, and machine-gunned it to death. Why

would anyone weep for a camel when so many humans were dead?<sup>15</sup>

As terrible as ground combat is, the American soldier was reasonably prepared for all of its horrors but one -- fratricide. The brutal facts are that we suffered less fratricide in the Gulf War than we had reason to expect,<sup>16</sup> that fratricide defied the most detailed and arduous efforts to eliminate it,<sup>17</sup> and that every brigade or regiment -- Army, Marine, or allied -- involved in serious intermingled fighting with the Iraqis experienced it.<sup>18</sup> Future historians may see in fratricide an indication of actually having had to fight, but the immediate trauma on Gulf War battlefields produced a momentary erosion of confidence in doctrine and training. Doctrine was fine and units as well trained as they could hope to be, yet weary leaders sporadically but pervasively edited fire controls in the last hours of the war. In one division a Bradley platoon was under continuous fire from clearly identifiable BMP's for four minutes before it forced its way through fire control encumbrances and got permission to fire.<sup>19</sup> In another division an Iraqi ambush got off the first rounds because Americans in overwatch hesitated to fire without clearance.<sup>20</sup> In yet another division a commander separated subordinate axes by huge distances to avoid collision, while a sister unit took the opposite tack and brought everyone up precisely on line.<sup>21</sup> One American column racing for a critical objective paused almost an hour to resolve a report of fratricide, only to find it had incorrectly originated in a distant and unrelated unit.<sup>22</sup> This dithering would have gotten

Americans killed in the face of an enemy that had not already collapsed. An operational pause would allow units to rest, shake off the horrors of war, and reaffirm the fire control doctrine that destroyed forty Iraqi divisions in four days at a cost of less than a hundred lives.

To this point we have developed an argument for a momentary pause before continuing operations on a scale comparable to that which had gone before. The pause was not absolutely necessary, but it was desirable to regain the peaks of efficiency demonstrated in the ground war's first several days. One compensates for tactical inefficiencies with blood. A prudent approach is to take time -- a day or two in this case -- to resolve concerns with respect to fuel, maintenance, logistical architecture, prisoners of war, rear area security, fatigue, and reaffirmed doctrine, and then to continue. Clearly this would have been necessary had Americans chosen to pursue into the depths of Iraq, capture Baghdad, or find and hang Saddam Hussein. Most critics of the hundred hour end point are not so grandiose in their expectations, and argue more narrowly for a limited continuation into Basra to seal off all Iraqi escape. Remembering what has been said to this point, let us turn our attention to that suggestion.

### CHAPTER III

#### THE BASRA OPTION

Nobody, not even the Iraqis, knows how much escaped the Kuwaiti theater through Basra after the ceasefire. Estimates vary wildly; it is probably safe to guess several hundred tanks, twice as many vehicles of other types, and perhaps ten thousand troops.<sup>23</sup> The total volume out of Kuwait through Basra was larger, but one must differentiate between those who had already slipped the noose and those that would have been caught after the war's hundredth hour.

There is little doubt that the 24th Infantry Division could have seized Basra on 28 February. They were prepared for the mission, had concentrated the necessary artillery, and had developed and communicated a workable plan.<sup>24</sup> Fighting for Basra was likely to be tougher than the fighting in the open desert. In addition to the wreckage of Iraqi units drifting through, one well-reputed Republican Guards division had dug into the defense of the town.<sup>25</sup> The Basra area is a complex sprawl of marsh, river, irrigation canals, villages, and a jumbled together city featuring buildings separated by twisting streets. Prepared positions in such terrain enable even mediocre soldiers to find their courage.<sup>26</sup> If the guardsmen defending Basra chose to fight -- as had their kinsmen on Objective Norfolk<sup>27</sup> or along the 73 Easting<sup>28</sup> -- they would have forced a difficult position by position struggle with extensive dismounted fighting. M1A1's

and Bradley's would have found it difficult to contribute in much of the terrain. Artillery and air support would have been mindful of huge concentrations of civilians in the midst of the fighting. Attack helicopters could have heavily attrited vehicles on egress routes, but would themselves have been vulnerable to small arms fire from covered positions. Heliborne infantry would have been extremely vulnerable in the interval it took to get armored support to them. Mechanized combat in the Basra area would have been the war's worst fighting.

How many Americans would have died to seize Basra? Thoughtful, well-considered estimates range from a low of twenty through a high of two hundred.<sup>29</sup> This author inclines to the high estimate. Low estimates suppose Republican Guards would not fight bravely in desperate circumstances and that carefully synchronized American combat multipliers would grind on through Basra as they had through the open desert. We have seen Republican Guards fight bravely in desperate circumstances. On Norfolk they crawled on their bellies between momentarily stationary M1A1's to attempt grill-door ATGM shots. When sheets of machinegun fire swept through them, they sprinted in an effort to get off their ATGM's before we cut them down. Bypassed Iraqi tanks rose to re-enter the battle -- and to certain death. The Iraqis are capable of courage.<sup>30</sup>

A discussion of the synchronization of combat multipliers suggests the analogy of safety. The Army issues its commanders a "Risk Assessment Worksheet" wherein such "risk values" as

preparatory time, visibility, task complexity, fatigue and the like are assigned numerical scores and tabulated. Normally this information is used in training to assess the likelihood of such accidents as trucks colliding in the dark, tanks backing over their own ground guides, or mechanics falling off of trailer tongues. If the continuation of the attack into Basra had been a training exercise, its risk assessment would have been 29 out of 35 -- very high.<sup>31</sup> In a sense, all American battle deaths are accidents. Our plans never sacrifice a soldier; we always design a theoretical possibility of zero American casualties. When American soldiers die something -- suppressive fire, minefield clearance, tactical early warning, fire distribution, or whatever -- has not quite worked out as planned. The capacity for error in adverse circumstances that causes tired men to injure themselves in training manifests itself in combat as well. The technically sophisticated American Army depends upon countless exchanges of complex information and instructions to synchronize its many sources of combat power. As fatigue degrades the quality of those transactions, the frontline combat soldier is stripped of much of the advantage he enjoys over often more numerous adversaries. In the fifth day of continuous combat the capacity for error -- or lapse -- would have been very great indeed.

The soldiers earmarked to assault Basra had few illusions. The 197th Brigade, most likely to lead, thought they had been selected because they were M113 mounted.<sup>32</sup> The M113 carries

almost twice as much dismounted "ramp strength" as the M2 Bradley. More ramp strength puts more soldiers into the close-in fighting -- with a greater capacity to "absorb" casualties. These soldiers would have attacked as ordered and would have seized Basra; should we have asked them to? Even the most modest projections for the Battle of Basra envision the bloodiest single battle of the Gulf War. The nightmare scenario would have been too hasty an attack, a momentary but embarrassing tactical check, and hysterical shelling and bombing to restore the initiative. Would the deaths of dozens of Americans, scores of Iraqi soldiers, and hundreds of civilians have been justified by the results?



## CHAPTER IV

### WHY SADDAM HUSSEIN SURVIVED

Advocates of the Basra option argue that just a little more damage and embarrassment would have collapsed Saddam Hussein's regime.<sup>33</sup> They further aver that fragments allowed to escape through Basra tipped the domestic military balance and saved his government. To accept this requires a capacity for fantasy. One must believe the escapees were preventable, combat effective, in support of the regime, and themselves an explanation for subsequent Baathist success.

As much as the Air Force pounded away at undifferentiated blips on the "Highway of Death" and as fast as allied tank columns moved, individual Iraqis who got as far as the Tigris or Euphrates were likely to get away. The maze of enclosures, buildings, ditches and vegetation near the rivers offers ample opportunity for exfiltration and escape.<sup>34</sup> Americans could not have quickly sealed off this vastness without becoming terribly thin on the ground themselves. The Tigris and Euphrates can be swum, as can the proliferation of canals and marshes near Basra. Numerous Iraqi soldiers did so, leaving their boots on the southern banks.<sup>35</sup> Tens of thousands of Iraqis in commandeered vehicles got far enough north to make good their escape, abandoning their transportation en route. Once on foot and visibly in retreat, they ceased to be a target of interest.<sup>36</sup> For reasons already discussed, it would have been some time

before Americans established a cordon thick enough to staunch the hemorrhage of dismounts through points as far separated as As Samawah and the Shatt al Arab. The seizure of Basra would not have helped in this regard; it would only have precluded the escape of vehicles -- not men -- through a finite number of vehicle crossings.

Of the vehicles that escaped through Basra, most would have slipped the noose before the 24th Infantry Division could possibly have closed it. The bulk of three Republican Guards infantry divisions, roughly aligned on the An Nasiriyah to Basra Highway, fled precipitously just ahead of the 24th's advance. The 24th's attack helicopters engaged a column of three hundred tanks that were north of the principal watercourse and thus already had made the crossing.<sup>37</sup> Divisions closest to the river made their escape before the ceasefire mattered. Divisions further from the river came across in tattered shreds, having lost or abandoned virtually all their equipment to ground pursuit, air interdiction, and maintenance collapse. Postwar aviators could track the attempted routes of such divisions by the trail of vehicles they left in their wake.<sup>38</sup> As rules of the thumb, Iraqi units that started running more than fifty miles from Basra were combat ineffective when they reached it, those that started less than fifty miles away could not have been intercepted.

It is important to note that much of the military debris that escaped the KTO was not particularly in support of Saddam

Hussein. Civil strife broke out almost immediately, precipitated by Shiite units murdering Republican Guardsmen sent to stiffen them.<sup>39</sup> Other than the three quickly extricated Republican Guards infantry divisions already mentioned, the KTO escapees were probably more of a liability than an asset to Saddam Hussein. They were armed, alienated, desperate for food and water, and conscious of the collapse of local authority. They seem to have been of little immediate utility, other than to fight each other.<sup>40</sup> The Sunni amongst them eventually ended up back under the control of the regular army, probably at about the time the Coalition released all prisoners of war and thus resolved whatever residual military manpower problems the Baathists may have had.<sup>41</sup> Saddam Hussein does not owe his survival to the wreckage that flowed through Basra after the ceasefire. He owes it to the forces he kept out of theater, the forces he pulled from theater early, the negligible military potential of his domestic adversaries, and the essential robustness of his Baathist regime.

Despite fiery prewar rhetoric, Saddam Hussein hedged his bets. He kept forty-two infantry divisions -- many of them well reputed -- out of the KTO, as compared to twenty-six in it. He also kept a mechanized division and a Republican Guards motorized division in central reserve. Most striking, he refused to risk either his air force or his considerable helicopter fleet. Only his armored forces -- his tanks -- were almost wholly committed to the "Mother of all Battles."<sup>42</sup> Three Republican Guards

infantry and perhaps the equivalent of one Republican Guards armored division were close enough to Basra to escape the trap before the ceasefire.<sup>43</sup> This left Hussein two-thirds of his army -- including five Republican Guards divisions, virtually all of his helicopters, and hundred of armored vehicles -- with which to fight Shiites and Kurds. We could not have destroyed these forces in a few more hours or on a whim. A continuation of the attack into Baghdad, which might have forced their destruction, would have been at least as big a project as Desert Storm had been to that point.

With or without KTO escapees, the surviving Iraqi Army was more than sufficient to suppress domestic opposition. One should not overrate the military sophistication necessary to win an Iraqi civil war. Indeed, American forces seem to have sat through the battle of Umm Qasr without particularly knowing that it was going on. At the time of the ceasefire, mixed Iraqi remnants under the command of a colonel holed up in the port of Umm Qasr while Americans secured the control of roads into the town. It is unclear how many troops and protected civilians were with the colonel. Apparently there were enough that he felt compelled to negotiate for the daily safe passage of a six hundred gallon water truck, a request American authorities granted. Every night a great fracas broke out in Umm Qasr, with tracers flying everywhere -- mostly high. In two weeks of fighting plausible evidence developed of only four deaths. Americans had instructions to capture all Iraqis bearing arms in

their sector. Shiite rebels caught attempting to infiltrate the town through the American sector expeditiously surrendered when hollered at in identifiable English. Indeed, those caught in a tactical pinch in the Iraqi sector seem to have consciously made for American positions, to be cycled back through the comparative safety of our EPW system and then repatriated. One sentinel swore the same Iraqi had surrendered to him three times. This must be apocryphal, but the prisoners did know enough about American captivity to recognize that MRE's came in twelve varieties, and to ask for an exchange if they got one they did not like.<sup>44</sup>

For American tankers surrounding Umm Qasr, the greatest excitement was the Iraqi water truck's daily run. They had been directed to demonstrate against it in a show of force. The assumption was that the alarmed driver would debrief at both ends of his route, thus properly impressing local authorities with the might of America so near at hand. All parties involved soon warmed to the sport. The atmosphere turned festive as the Iraqi driver, escorted front and rear by M3 Bradleys, raced down the road weaving his truck back and forth, gesturing dramatically, and hollering in Arabic while platoons of M1A1's swept through the desert scrub in a frenzy to achieve firing positions locking on as many 120mm cannon as possible before the six hundred gallon pod sped past its release point. One wonders what this Iraqi will tell his grandchildren about his role in breaking the great Americo-Shiite siege of Umm Qasr.<sup>45</sup>

As unwarlike as the fireworks around Umm Qasr appeared, they were the application of force for political purpose. After awhile the violence of the evening exchanges subsided and they became less frequent. One night they ceased altogether. The Shiite rebels seem to have just drifted away. They may not have been eager to fight for Saddam Hussein, but they were not eager to fight against him either. In point of fact, they were not eager to fight at all. The siege, such as it was, may be a metaphor for all of the civil strife in Iraq. It is true that more firepower was used and more people -- mostly bystanders -- were killed elsewhere. No one denies the agony of countless refugees or the brutality of repression. There was not, however, any particular demonstration of military finesse or prowess. One does not have to fantasize the escape of Republican Guards tank divisions from Kuwait to explain Hussein's domestic victory. The military advantages -- not measurable on the scale that compares M1A1 and T72 tank battalions -- that secured Umm Qasr for the Baath included a little better organization, a little more ammunition, demonstrably more resolute leadership, and a daily water truck.<sup>46</sup>

One would be unwise to underrate the hold Saddam Hussein has on his nation's Sunni Moslem core. We have seen the incredible hardships they have endured and yet sustained him in power. His officers and soldiers have demonstrated a capacity for courage and a resolution that intimidates domestic and regional rivals alike. In the several days before American forces left southern

Iraq, poised young men in western dress and sunglasses driving small European cars showed up amongst the villagers and Bedouin. Whoever they were, they were greeted with deference and perhaps resignation, but not fear. The American withdrawal provoked no overwhelming wave of refugees; by and large, villagers and Bedouin preferred to take their chances with the restored regime.<sup>47</sup> They did stop pilfering oil from the local taplines, a practice the American occupation had regarded with benign neglect.<sup>48</sup> Theirs is a brutal and repressive government, but a stable one. We were wise not to translate a war to liberate Kuwait into a war to remake Iraq.

## CHAPTER V

### DOCTRINAL IMPLICATIONS AND CONCLUSIONS

Each war is fraught with doctrinal implications; the Gulf War was no exception. This paper seems to suggest that fighting more than a hundred hours is too hard, closing an encirclement too costly, and destabilizing tyrants too unpredictable a military option. Such insights are anathema to the "can do" spirit with which we have been raised. They are also true. Has something changed in the nature of war?

Some fraction of the circumstances that brought American forces to the end of their leash at the hundredth hour can be resolved by technology. It seems wrong-headed to tie a tank with the speed and power of the M1A1 to antiquated M109A2 howitzers that can't keep up with it, M88A1 recovery vehicles that can't tow it, M577 command tracks that can't follow it, and ancient trucks that can't support it. These shortcomings are generally recognized, adequate prototypes exist, and mere money would provide relief.<sup>49</sup> The M1A1 is too much of a fuel hog, and this too seems appropriate for technical improvement.<sup>50</sup> The Army's approach to fratricide since the war has been broad-minded and prudent; the ultimate fielding of suitable Identification Friend or Foe (IFF) devices will radically reduce whatever constraints that heart-rendering trauma imposed.<sup>51</sup> In sum, the logistical concerns that manifested themselves at the hundredth hour can be improved upon by technical means, as can the most striking



psychological wound.

The concern for rear area security -- another argument for a momentary pause -- is an operational issue that relates to the allocation of forces. Since our tail to tooth ratio is so high, we have more reason than any other army to be concerned. Helicopters help in this regard, as do designated follow and support forces. This is not a new problem; in World War II it was not unusual for two regiments to clear the terrain one had advanced through.<sup>52</sup> The rear area battle in the wake of an advance -- in particular a fast one -- must be as carefully thought through as the main battle to its front. The overrun enemy is far less formidable than before, but oncoming logistics are far more vulnerable than the combat units that have already passed. The tug to rear areas includes a concern for those stranded in it, so following units must quickly apprise leading units as they secure their maintenance clusters.

This brings us to fatigue. Men tire physically and psychologically. The more complex the task, the more degraded their performance.<sup>53</sup> Americans are ever more complex, and therefore ever more vulnerable. Fatigue is not new; extended continuous operations by moving units is popular mythology. In World War II attacking companies were combat ineffective after three days, regardless of their casualties. Infantry commanders replaced spent companies with fresh ones, and paced advances by resting a third of their force, then leap-frogging it to catch up with the battle in armored vehicles or by truck.<sup>54</sup> This

technique would not work in the Gulf War tempo, nor did staggered rest techniques developed in training environments. Everybody was mounted, everybody was moving, and everybody was in anticipation of immediate contact. Iraqi positions were so thick and so continuous units hardly got through one before encountering another. Even the operational reserve, the 1st Cavalry Division, was moving at the pace of the advance and experiencing much of the duress of leading units.<sup>55</sup> By doctrine, the operational reserve can be thrown in to exploit or to sustain momentum. This assumes the operational reserve is fresh.

The art of war as practiced by the masters has always included a sense of pace. An accommodation of limits brought troops and equipment to the battlefield in the best possible condition. Measures to do so must always be reassessed in the light of contemporary circumstances. Clausewitz articulated the notion of a culminating point. Thousands of commanders have found him right in circumstances stemming from some combination of fuel, maintenance, logistical support, unsecured rear areas, fatigue, and casualties. Our Gulf War circumstances were analgous to those of Patton's Third Army on 30 August 1944, except that we crowded so much more distance and destruction into the space of four days.<sup>56</sup> It seems prudent to program a series of minor culminating points rather than enduring a single climactic one forced upon us. This has nothing to do with willpower; the American soldier will do all that he is asked. It has to do with sustaining efficiency, and thus saving lives.

Encirclement is almost as hazardous a vision as continuous operations. Since 217 B.C. commanders have attempted to recreate Cannae on ever grander scales.<sup>57</sup> This usually does not work as planned for some combination of three reasons: the encircling columns are themselves horribly exposed, the pace of encirclement leaves gaps through which one's adversary exfiltrates, and some point on the circuit is likely to be a passage through tough terrain defended by desperate men. The Mongols had a different idea; once they had their adversaries running they left them an open path, annihilating them with continuous archery and the pace of their pursuit.<sup>58</sup> Our extraordinary precision guided munitions, gunnery proficiency, synchronized operating systems, and intelligence assets enable us to update the Mongols. In most circumstances we do not need to take the risks or pay the costs of encirclement. Surprisingly little will get far when pursued by well ordered M1A1's in fully cry. Our operational technique should be to carefully prepare a knockout blow, precipitate flight, and annihilate when in pursuit. Timing will be essential, since we must pace ourselves as well.

We do need to recognize the limits of force as Americans apply it. It is no accident that we could not bring ourselves to massacre helpless retreating men who later fought for Saddam Hussein. It is news only to us that some rulers would rather lose wars than palace guards. It is not unlikely that the prestige of having fought the United States of America can exceed the embarrassment of having been beaten by her. It may be that

many of the world's peoples are satisfied with Nebuchadnezzar and uninterested in Thomas Jefferson. Much that goes on in the world is not covered by FM100-5.<sup>59</sup> To professional soldiers, this must mean that it is somebody else's business. Extirpating tyrants is a military pursuit; destabilizing them is not.

Perhaps the most striking doctrinal implication of the Gulf War lays in a technique in fact practiced: articulate objectives clearly, muster public support for them, and communicate them to the troops. Critics who elaborated schemes beyond the liberation of Kuwait may have enjoyed a breadth of vision enabling them to perceive the utility of a little more war. However, the men who would have had to fight it found personal survival -- and the survival of their comrades -- of greater interest than diplomatic possibilities. They knew what they had been asked to do, and they knew that they had done it. Their most senior comrade-in-arms told America:

We've accomplished our mission and when the decision makers come to the decision that there should be a cease-fire, nobody will be happier than me.<sup>60</sup>

When lives lost and lives taken no longer serve a purpose, it is time to stop killing people.

## NOTES

1. Douglas Waller and John Barry, "The Day We Stopped the War," Newsweek, 20 January 1992, pp. 16-25; Tom Donnelly, "The General's War," Army Times, 2 March 1992, pp. 8-18; The Editors of U.S. News and World Report, Triumph Without Victory: The Unreported History of the Persian Gulf War, (New York: Random House, 1992), pp. 399-415; Testimony of Congressman Les Aspin to the House of Representatives, as televised on CNN 231915 April, 1992.

2. Interview with Lieutenant Colonel Rodney Thomas, then G4 of the 3rd Armored Division, 5 May 1992; Interview with Lieutenant Colonel Stephen Marshman, then Commander of the 498th Forward Support Battalion, 11 October 1991; Interview with Lieutenant Colonel Taylor Jones, then Commander of 3-66 Armor, 2 March 1991; Interview with Brigadier General Jerry R. Rutherford, then Assistant Division Commander (Support) for the First Mechanized Infantry Division, 4 April 1991.

3. Marshman.

4. Ibid.; Interview with First Lieutenant Joe Angel and CW3 Tom Reinke, Battalion Motor Officer and Battalion Maintenance Technician, 2-66 Armor, 28 February 1991.

5. Thomas; Marshman.

6. U.S. Naval Institute, "Weapons/Systems/Platforms (Menu) - Ground Combat Vehicles -- Support Vehicles - U.S. - M88A1," USNI Military Database, March 1991.

7. Marshman.

8. U.S. Naval Institute, "Weapons/Systems/Platforms (Menu) - Ground Combat Vehicles - Support Vehicles - U.S. - M113," USNI Military Database, March 1991.

9. Lieutenant General William G. Pagonis and Major Harold E. Rough, "Good Logistics is Combat Power: The Logistical Sustainment of Operation Desert Storm," Military Review, September 1991, pp. 28-39; Colonel Peter C. Langenus, "Moving an Army," Movement Control for Desert Storm," Military Review, September 1991, pp. 40-51.

10. Marshman.

11. Pagonis and Rough; Langenus.

12. Debrief of Major Dennis McGuckian, Commander of Task Force McGuckian conducting RACO 1-5 March 1991, 5 March 1991; Triumph Without Victory, pp. 393-394.

13. Ibid.

14. Author's personal experience while in command of 2-66 Armor, 28 February 1991.

15. Ibid., 24-28 February 1991.

16. This is controversial. The most thoughtful unclassified forecast of Gulf War casualties averages to 1750 American Dead. See Colonel Trevor N. Dupuy, Attrition: Forecasting Battle Casualties and Equipment Losses in Modern War, (Fairfax, VA: Hero Books, 1990), p. 131. Even at the modest rate of two percent, this forecasts 35 fratricides. See Lieutenant Colonel Charles R. Shrader, Amicide: The Problem of Friendly Fire in Modern War, (Fort Leavenworth, KS: Combat Studies Institute, 1982). For a number of reasons -- most notably Iraqi inability to penetrate M1A1 frontal armor, American gunnery performance, and Iraqi tactical paralysis -- the Iraqis did not kill us at expected rates. Unfortunately, we could not correspondingly reduce the likelihood of killing our own.

17. e.g., 2nd Armored Division (Forward)'s Troop Education Program on Vehicle Identification and Fratricide, 19-23 February 1991.

18. An unclassified route to this insight is to juxtapose unit accounts, such as the very good Army Times series cited in the bibliography, with the matrix of fratricides that appears in Sean D. Naylor, "Friendly Fire: The Reckoning," Army Times, 21 August 1991, pp. 4-6.

19. Steve Vogel, "Metal Rain: Old Ironsides and the Iraqis Who Wouldn't Back Down," Army Times, 16 September 1991, p. 22.

20. Steve Vogel, "Hell Night," Army Times, 7 October 1991, pp. 23-24.

21. Presentations, "Large Unit Maneuvers" and "Small Unit Maneuvers," USAREUR Desert Storm Training Conference, Grafenwohr, Germany, 16 July 1991.

22. Donnelly, "The General's War."

23. Triumph Without Victory, pp. 399-415; Walker and Barry; Bo Eldridge, "Desert Storm: The Mother of All Battles," Command, November - December 1991, pp. 35-37.

24. Interview with Major General Barry McCaffrey, Commanding General of the 24th Infantry Division, 16 April 1992; Major Jason K. Kamiya, A History of the 24th Mechanized Infantry Division Combat Team During Operation - Desert Storm, (Fort Stewart, GA: 24th Infantry Division, 1992), pp. 53-54.

25. Ibid., 2nd Armored Division Forward Unclassified Intelligence Update for Troop Information, Kuwait, 12 March 1991; Frank Chadwick and Matt Caffrey, Gulf War Fact Book (Bloomington, IL: Game Designers Workshop, 1991), p. 102.

26. This is not a new idea. See Sun Tzu as translated by Samuel B. Griffith, The Art of War, (New York: Oxford University Press, 1969), pp. 85-89.

27. Vogel, "Hell Night."

28. Steve Vogel, "A Swift Kick: 2nd ACR's Taming of the Guard," Army Times, 5 August 1991, pp. 10-18, 28-30, 61.

29. McCaffrey; Interview with Lieutenant Colonel John Batiste, then S3 of the 197th Mechanized Infantry Brigade, 18 April 1992; Interview with Lieutenant Colonel Clint Ancker, then G3 of the 2nd Armored Division Forward, 12 March 1991.

30. Author's personal experience while in command of 2-66 Armor during the Battle for Norfolk, 26-27 February 1991.

31. GTA "Risk Assessment Worksheet" issued to all commanders at the Fort Leavenworth Phase of the Pre-Command Course.

32. Batiste.

33. See Endnote 1, above.

34. Author's personal reconnaissance during the occupation of Southern Iraq, 24 March - 28 April 1991; Ancker, op.cit., caught much of this terrain on film.

35. Eldridge; Interview with Lieutenant Colonel Brantz J. Craddock, then Commander of 4-64 Armor, 2 May 1992.

36. General Norman Schwarzkopf as quoted in Colonel Harry G. Summers, On Strategy II: A Critical Analysis of the Gulf War (New York: Dell, 1992), pp. 293-294.

37. McCaffrey.

38. Ancker; Interview with Colonel David Weisman, Commander of 2nd Armored Division Forward during the Gulf War, 14 April 1991.

39. Ibid., Author's personal experience -- we found grim evidence of this practice on several occasions.

40. Ibid.; see also Endnote 25, above.

41. Department of Defense, Conduct of the Persian Gulf War: Final Report to Congress (Washington: Department of Defense, 1992), p. 0-20.

42. Chadwick and Caffrey, 98; Eldridge, 36-37.

43. See Endnote 25, above.

44. Jones; Ancker; author's personal experience while in command of the 2-66 Armor posted as security south of Umm Qasr, 8-24 March 1991.

45. Ibid.

46. Ibid.; Eldridge, 36-37.

47. Jones; Ancker; Weisman; author's personal experience; Note the relatively few refugees from southern Iraq in Coalition Camps, Interview with Lieutenant Colonel James Hillman, then in command of 1-44 Infantry charged with securing the refugee camp at Rafha, 7 June 1992.

48. Ibid.

49. U.S. Naval Institute, "Weapons/Systems/Platforms (Menu) - Ground Combat Vehicles - Support Vehicles - U.S. - M88A1, M113, HEMMT, HMMWV," USNI Military Database, March 1991.

50. U.S. Naval Institute, "Weapons/Systems/Platforms (Menu) - Ground Combat Vehicles - Tanks - U.S. - M1A1," USNI Military Database, March 1991.

51. Colonel David Bird, Combat Identification Program (Fort Meade, MD: Combat Vehicles Identification Division, 1991); Dennis Steele, "Keeping Friendly Fire Friendly," Army, March 1992, pp. 30-34.

52. Major John Sloan Brown, Draftee Division: The 88th Infantry Division in World War II (Lexington, KY: The University Press of Kentucky, 1986), pp. 126-131.

53. Division of Neuropsychiatry, Psychological Aspects of Desert Operations: What to Expect (Washington: Walter Reed Army Institute of Research, 1990), pp. 6-7.



54. Brown, 203; Major John S. Brown, Winning Teams: Mobilization - Related Correlates of Success in American World War II Infantry Divisions (Fort Leavenworth, KS: Command and General Staff College, 1985), pp. 144-150.

55. J. Paul Scicchitano, "Night Strikes: The Secret War of the 1st Cavalry Division," Army Times, 23 October 1991, pp. 8-16.

56. Martin Blumenson, The Patton Papers 1940-1945 (Boston: Houghton Mifflin, 1957), pp. 523-535.

57. e.g., General Fieldmarshal Count Alfred von Schlieffen (authorized translation), Cannae (Fort Leavenworth, KS: The Command and General Staff School Press, 1931).

58. Major Richard D. McCreight, The Mongol Warrior Epic: Masters of Thirteenth Century Maneuver Warfare (Fort Leavenworth, KS: Command and General Staff College, 1983), pp. 74-89.

59. Here I refer to FM100-5 as it existed at the time of the Gulf War. It remains to be seen whether current revisions invite us into circumstances for which we are not suited. See Colonel Steven M. Butler, "Refocusing Army Doctrine in a Changing World," Military Review, April 1992, p. 1.

60. Schwarzkopf, p. 292.

## BIBLIOGRAPHY

- Abu-Hakima, Ahmad Mustafa. The Modern History of Kuwait: 1750 - 1965. London: Luzac and Company, 1983.
- Ancker, Clint. The Second Armored Division and the Gulf Conflict. Newport, RI: Naval War College, 1992.
- Antal, Major John F. "The Iraqi Army: Forged in the (Other) Gulf War." Military Review, February 1991, pp. 62-72.
- Association of the U.S. Army, The Year of Desert Storm: 1991 Green Book. New York: Army Magazine, 1991.
- Bird, Colonel David. Combat Identification Program. Fort Meade, MD: Combat Vehicle Identification Division, 1991.
- Bird, Julie and Vogel, Steve. "Friendly Fire." Army Times, 12 August 1991.
- Blackwell, Major James. Thunder in the Desert: The Strategy and Tactics of the Gulf War. New York: Bantam Books, 1991.
- Blumenson, Martin. The Patton Papers, 1940-1945. Boston: Houghton Mifflin, 1957.
- Brown, Major John S. Draftee Division: The 88th Infantry Division In World War II. Lexington, KY: University of Kentucky Press, 1986.
- Brown, Major John S. Winning Teams: Mobilization - Related Correlates of Success in American World War II Infantry Divisions. Fort Leavenworth, KS: Command and General Staff College, 1985.
- Chadwick, Frank and Caffrey, Matt. Gulf War Fact Book. Bloomington, IL: Game Designers Workshop, 1991.
- Craddock, Lieutenant Colonel Brantz J. 24th Mechanized Infantry Division Combat Team Historical Reference Book. Fort Stewart, GA: 24th Infantry Division, 1992.
- Craddock, Lieutenant Colonel Brantz J. 24th Mechanized Infantry Division Combat Team Operation Desert Storm Attack Plan OPLAN 91-3. Fort Stewart, GA: 24th Infantry Division, 1992.
- Department of the Army, FM17-12-1: Tank Combat Tables. Washington: Department of the Army, 1988.
- Donnelly, Tom. "From the Top: How Commanders Planned Operation Desert Shield." Army Times, 24 February 1992, pp. 8-24.

- Donnelly, Tom. "The General's War." Army Times, 2 March 1992, pp. 8-18.
- Dupuy, Colonel Trevor N. Attrition: Forecasting Battle Casualties and Equipment Losses in Modern War. Fairfax, VA: Hero Books, 1990.
- Dupuy, Colonel Trevor N. How to Defeat Saddam Hussein: Scenarios and Strategies for the Gulf War. New York: Warner Books, 1991.
- Eldridge, Bo. "Desert Storm: The Mother of All Battles." Command, November - December 1991, pp. 26-43.
- Flanagan, Lieutenant General Edward M. "The 100-Hour War." Army, April 1991, pp. 18-26.
- Flynn, Major Fred V. "Preparing 'Self' for Combat." Military Review, August 1991, pp. 77-87.
- Hiro, Dilip. The Longest War: The Iran-Iraq Military Conflict. New York: Routledge, 1991.
- Horner, Lieutenant General Charles A. "The Air Campaign." Military Review, September 1991, pp. 16-27.
- Jupa, Richard. "The Iraqi Republican Guards: Just How Good Were They?" Command, November - December, 1991, pp. 44-51.
- Kamiya, Major Jason D. A History of the 24th Mechanized Infantry Division Combat Team During Operation Desert Storm. Fort Stewart, GA: 24th Infantry Division, 1992.
- Keegan, John and Wheatcroft, Andrew. Zones of Conflict: An Atlas of Future Wars. New York: Simon and Schuster, 1986.
- Kindsvatter, Lieutenant Colonel Peter S. "VII Corps in the Gulf War: Deployment and Preparation for Desert Storm." Military Review, January 1992, pp. 2-16.
- Langemus, Colonel Peter C. "Moving An Army: Movement Control for Desert Storm". Military Review, September 1991, pp. 40-51.
- McCreight, Major Richard D. The Mongol Warrior Epic: Masters of Thirteenth Century Maneuver Warfare. Fort Leavenworth, KS: Command and General Staff College, 1983.
- McIntire, Katherine. "Speed Bumps: 82nd Airborne's Shaky Line in the Sand." Army Times, 21 October 1991, pp. 12-18, 76-77.

- Miller, Judith and Mylroie, Laurie. Saddam Hussein and the Crisis in the Gulf. New York: Times Books, 1990.
- Naylor, Sean D. "Flight of Eagles: 101st Airborne Division's Raids into Iraq." Army Times, 22 July 1991.
- Naylor, Sean D. "Friendly Fire: The Reckoning." Army Times, 26 August 1991, pp. 4-6.
- Naylor, Sean D. "Home of the Brave; Desert Doesn't Scare 3d ACR." Army Times, 27 January 1992, pp. 8-16, 58.
- Pagonis, Lieutenant General William G. and Raugh, Major Harold E. "Good Logistics is Combat Power: The Logistic Sustainment of Operation Desert Storm." Military Review, September 1991, pp. 28-39.
- Rinaldi, Angela. Witness to War. Los Angeles: The Los Angeles Times, 1991.
- Roth, Margaret. "End Game: To Win Must We Go To Baghdad? And What Then?" Army Times, 18 February 1991, pp. 12-13.
- Scicchitano, J. Paul. "Eye of the Tiger: Stalking Iraqi Prey with the Tiger Brigade." Army Times, 10 June 1991, pp. 12-18, 61.
- Scicchitano, J. Paul. "Night Strikes: The Secret War of the 1st Cavalry Division." Army Times, 23 October 1991, pp. 8-16.
- Shrader, Lieutenant Colonel Charles R. Amicide: The Problem of Friendly Fire in Modern War. Fort Leavenworth, KS: Combat Studies Institute, 1982.
- Steele, Dennis. "Keeping Friendly Fire Friendly." Army, March 1992, pp. 3-35.
- Summers, Colonel Harry G. On Strategy II: A Critical Analysis of the Gulf War. New York: Dell, 1992.
- Sun Tzu as translated by Samuel B. Griffith. The Art of War. New York: Oxford University Press, 1963.
- Tice, Jim. "Coming Through: The Big Red Raid." Army Times, 26 August 1991, pp. 12-20.
- U.S. News and World Report. Triumph Without Victory: The Unreported History of the Persian Gulf War. New York: Random House, 1992.
- VII Corps Public Affairs Office. The Desert Jayhawk. Stuttgart, Germany: Mattheas GmbH, 1991.